

What is claimed is:

1. A method of modifying development of a plant comprising transforming a plant cell with a nucleic acid encoding a plant cyclin-dependent kinase inhibitor polypeptide to produce a transformed plant cell; and, growing the transformed
5 plant cell or progeny of the transformed plant cell to produce a transformed plant under conditions wherein the plant cyclin-dependent kinase inhibitor polypeptide is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.
2. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent
10 kinase inhibitor is homologous to *ICK1*, *ICK2*, *ICN2*, *ICN6* or *ICN7*.
3. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor is selected from a group consisting of *ICK1*, *ICK2*, *ICN2*, *ICN6* and *ICN7*.
4. The method of claim 1, wherein the cyclin-dependent kinase inhibitor
15 polypeptide is 70% identical, when optimally aligned, to *ICK1*, *ICK2*, *ICN2*, *ICN6* or *ICN7*.
5. The method of claim 1, wherein the cyclin-dependent kinase inhibitor polypeptide is selected from a group consisting of *ICK1*, *ICK2*, *ICN2*, *ICN6* and *ICN7*.
- 20 6. The method of claim 1, wherein the plant is a member of the Cruciferae family.
7. The method of claim 1, wherein the plant is a member of the *Brassica* genus.
8. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide is operably linked to a constitutive promoter.
9. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent
25 kinase inhibitor polypeptide is operably linked to a tissue-specific promoter.
10. The method of claim 9, wherein the tissue-specific promoter is at least 90%

identical, when optimally aligned, to an *AP3* promoter.

11. The method of claim 9, wherein the tissue-specific promoter is the *AP3* promoter.
12. The method of claim 9, wherein the tissue-specific promoter mediates expression
5 of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in petal or stamen primordia.
13. The method of claim 1 wherein the development of the tissue in the plant is modified so that the plant is male sterile.
14. The method of claim 1 wherein the development of the tissue in the plant is
10 modified so that petals on the transformed plant are altered or absent.
15. A transgenic plant comprising an expressible heterologous nucleic acid encoding a cyclin-dependent kinase inhibitor polypeptide capable of inhibiting a cyclin-dependent kinase, wherein the heterologous nucleic acid is introduced into the transgenic plant, or an ancestor of the transgenic plant by the method of claim 1.
16. A method of modifying development of a plant, wherein the plant comprises a
15 nucleic acid encoding a cyclin-dependent kinase inhibitor polypeptide, comprising transforming a plant cell with an anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide, to produce a transformed plant cell; and, growing the
20 transformed plant cell or progeny of the transformed plant cell to produce a transformed plant under conditions wherein the anti-sense nucleic acid is transcribed in a proliferative tissue of the transformed plant to inhibit expression of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in the proliferative tissue of the transformed plant, to promote growth of a
25 differentiated tissue in the plant.
17. A transgenic plant having a recombinant genome comprising:

a nucleic acid encoding a cyclin-dependent kinase inhibitor; and,

a heterologous anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor;

wherein the heterologous anti-sense coding sequence is introduced into the plant, or an ancestor of the plant, by the method of claim 16.

- 5 18. A transgenic plant having a recombinant genome comprising a heterologous nucleic acid encoding a cyclin-dependent kinase inhibitor that is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.

19. A transgenic plant having a recombinant genome comprising:

10 a nucleic acid encoding a cyclin-dependent kinase inhibitor; and,

a heterologous anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor;

15 wherein the anti-sense coding sequence is transcribed in a proliferative tissue of the transformed plant to inhibit expression of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in the proliferative tissue of the transformed plant, to promote growth of a differentiated tissue in the plant.

20. A transgenic plant tissue derived from the transgenic plant of claim 18.

21. The plant tissue of claim 20 wherein the tissue is selected from the group consisting of a seed and a flower.

22. A method of growing the transgenic plant of claim 18, comprising growing the plant under conditions so that the cyclin-dependent kinase inhibitor polypeptide is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.

25 23. A method of growing the transgenic plant of claim 19, comprising growing the plant under conditions so that the anti-sense nucleic acid is transcribed in a

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proliferative tissue of the plant to inhibit the expression of the cyclin-dependent kinase inhibitor in the proliferative tissue to promote development of a differentiated tissue in the plant.

24. An isolated nucleic acid encoding a plant cyclin-dependent kinase inhibitor, wherein the nucleic acid is at least 90% identical, when optimally aligned, to a nucleic acid selected from a group consisting of *ICK2*, *ICN2*, *ICN6* and *ICN7*.
25. The nucleic acid of claim 24, wherein the nucleic acid is selected from a group consisting of *ICK2*, *ICN2*, *ICN6* and *ICN7*.
26. An isolated plant cyclin-dependent kinase inhibitor polypeptide encoded by the nucleic acid of claim 24.
27. A method of modifying development of a plant comprising transforming a plant cell with a nucleic acid encoding a plant cyclin-dependent kinase inhibitor polypeptide to produce a transformed plant cell; and, growing the transformed plant cell or progeny of the transformed plant cell to produce a transformed plant under conditions wherein the plant cyclin-dependent kinase inhibitor polypeptide is expressed in a proliferative tissue of the transformed plant to change the ploidy of a differentiated tissue in the plant.